

The quantitative distribution of the common mussel (*Mytilus*) in the North-Western part of the Black Sea

50 to 100/m<sup>2</sup>; 2) from 200 to 250; 3) from 350 to 400; 4) from 750 to 1000 and 5) from 1000 to 1500 m<sup>2</sup> of ground area. In common mussels utilized for human consumption (with a shell length of 50 mm) represent from 3 to 44 % of the absolute population, and 14 % on the average. The regions are described with respect to their position, their dimensions, their population and their depth. (Fig 1). The total amount of common mussel is estimated to amount to 7,6 million cwt. Finally the biology of the common mussel is described in short. There are 1 figure and 4 references, 4 of which are Soviet.

ASSOCIATION: Institut okeanologii Akademii nauk SSSR (Institute of Oceanography AS USSR)

PRESENTED: February 22, 1958, by I. I. Shmal'gauzen, Member, Academy of Sciences, USSR

SUBMITTED: February 21, 1958

Card 5/5

1. Mussels--Black Sea 2. Mussels--Abundance 3. Mussels--Statistical analysis

AUTHORS: Nikitin, V. N., Turpayeva, Ye. P. SOV/20-12-1-49,55

TITLE: [Marine growth] Processes in the Black Sea (Protsessy obrastaniya v Chernom more) Settling of Larvae in the Gelendzhik Region (Osedaniye lichinok v rayone Gelendzhika)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 12, Nr 1, pp. 172 - 174 (USSR)

ABSTRACT: The determination of the qualitative and quantitative amount of larvae of the organisms growing on ships and hydrotechnical buildings in the sea is one of the most important stages in the investigation of the growth process of these organisms. The present communication concerns the results of special observations carried out during the years 1954 - 1956 at the Caucasian coast (Kavkaz) in the district of Gelendzhik by frames of stainless steel which were sunk into the sea. Object carriers were introduced in pairs in the apertures of these frames and were exchanged every ten days. The number and composition of the settled and the mobile organisms growing on the experimental glasses are shown by table 1. Figure 1 shows the curve of fluctuations

Card 1, 3  
2

[Marine growth] Processes in the Black Sea. Settling of  
Larvae in the Gelendzhik Region

SOV, 24-11-1-1-1, 35

of the total number of the settling fixed organisms after the single months of the mentioned three years. The maxima of the curves correspond with the temperature maximum of the water. The species composition of the settling organisms differed from year to year. These fluctuations are due to the fluctuating number of larvae of the respective species in the plankton of the one or the other year. Fluctuations in the settling quantity in the course of one summer are caused by a northeasterly which drove off the larvae from the water surface of the coastal zone to the open sea (Fig 2). There are 2 figures, 1 table, and 2 references, which are Soviet.

ASSOCIATION: Institut okeanologii Akademii nauk SSSR (Institute of Oceanology, AS USSR)

PRESENTED: January 17, 1958, by Ye.N.Pavlovskiy, Member, Academy of Sciences, USSR

Card 2/6

NIKITIN, V.N.

Effect of currents on quantitative distribution of benthic fauna  
in the northwestern part of the Black Sea. Dokl. AN SSSR 136 no.2:  
465-467 '61. (MIRA 14:1)

1. Institut okeanologii Akademii nauk SSSR. Predstavleno akademikom  
I. I. Shmal'gauzenom.  
(Black Sea--Benthos) (Ocean currents)

NIKITIN, V.N.

Quantitative distribution of the bottom fauna in the northwestern part  
of the Black Sea. Dokl.AN SSSR 138 no.5:1198-1201 Je '61.  
(MIRA 14:6)

1. Institut okeanologii AN SSSR. Predstavleno akademikom I.I.  
Shmal'gauzenom.

(Black Sea—Benthos)



00/49119

USAR/Chemistry - Cellulose  
Chemistry - Hydrogen Bonds

Jul 49

"Research on Cellulose and Its Derivatives With  
Infrared Absorption Spectra," V. M. Kikotin, Technol  
Inst Imeni V. M. Molotov, Leningrad, 102 pp.

"Zhur Fiz Khim" Vol XIII, No 7 - p. 775-85

Intermolecular activity in cellulose and its deriva-  
tives is caused chiefly by forces of the hydrogen  
bond, which largely determines their properties as  
well. In ramie and cotton fibers, hydroxyl groups  
are practically all included in the hydrogen bond.  
This is true also for mercerized fiber and hydrate

60/49119

USAR/Chemistry - Cellulose (Contd)

Jul 49

cellulose, but strength of bond is less than in  
natural fibers. In incompletely substituted cell-  
ulose esters (nitro acetyl and ethylcellulose)  
hydroxyls are not included. Esterification breaks  
down hydrogen bonds. Submitted 3 Nov 48.

60/49119

USSR/Chemistry - Nitrocellulose  
Chemistry - Spectra, Vibration

Jul 49

"Infrared Absorption Spectra of Solutions of Nitrocellulose," V. N. Nikitin, Technol Inst imeni V. M. Melotov, Leningrad,  $3\frac{1}{2}$  pp

"Zhur Fiz Khim" Vol. XXIII, No 7 - p. 786-9

Dinitrate, dissolved first in alcohol-ether mixtures and then in acetone, is used to aid in plotting changes in vibration frequency of hydroxyl groups of nitrocellulose. Submitted 9 Oct 48.

60/49722



Nikitin, V. N.

Application of the infrared absorption spectrum to the investigation of cellulose and its derivatives. V. N. Nikitin. *Vestnik Leningrad. Univ.* 5, No. 3, 33-44 (1950), *Ch. O.A.* 43, 88876. The OH bands of natural and mercerized cellulose (I) fibers, such as cotton, in the range 1.0 to 2.5  $\mu$  were shifted towards longer wave lengths indicating H bonding between the chains of I. Nitration of I caused the appearance of free OH bands at 1.44, 1.91, and 2.07  $\mu$ . The spectra of thin films of dinitrocellulose (II), cellulose acetate (III), and ethylcellulose did not have H-bonded OH bands whereas cellulose regenerated from II and III exhibited H bonding. Solns. of I, II, and III in  $Ac_2O$ , dioxane,  $C_6H_6$ , and EtOH showed H bonding between OH of cellulose derivs. and solvent mol.; the 1.44  $\mu$  band of II was displaced by 100  $cm^{-1}$  in  $Ac_2O$  and by 580  $cm^{-1}$  in dioxane. It is concluded that I dissolves in solvents through H bonding and exists in solns. in mol. rather than in micelle form.

G. Meguerian

NIKITIN, V. N.

Volkenshtein, M. V., Nikitin, V. N. and Iakovleva, T. V. The reversible isomerism of dienes. Pages 471 - 477.

Inst. of High Molecular Compounds  
Acad. of Sci. USSR.

SO: Bulletin of the Academy of Sciences, Izvestia, (USSR) Vol. 14, No. 4.  
(1950) Series on Physics.

CA

3

**Infrared spectroscopy of the hydrogen bond at low temperatures.** V. N. Nikitin and N. G. Yaroslavskii. *Doklady Akad. Nauk SSSR* 77, 1015 (1951). The structure of the infrared absorption band O-H in the region around  $6500\text{ cm}^{-1}$  (1st harmonic of the fundamental valence vibration frequency O-H) was investigated in the cryst. and amorphous states, at  $+20$  and  $-180^\circ$ , in MeOH, EtOH, BuOH, polyvinyl alc., glycerol, resorcinol, beet sugar, phenol-HCHO resin, and cryst. urea (in the latter, for the H bond N-H...O). For the low-temp. detns., use was made of the observation that liquid air in a layer a few cm. thick does not absorb in the region  $1.0-1.0\text{ }\mu$ , nor does its absorption spectrum in the range  $0.9-2.0\text{ }\mu$  mask the higher overtones of the vibrations O-H, O-H...N-H, C-H, C=O, and their combinations. Cryst. sucrose at  $20^\circ$  shows a sharp band  $1.44\text{ }\mu$  ( $6914\text{ cm}^{-1}$ ), unperturbed O-H, and 2 displaced broad bands with centers at  $1.51\text{ }\mu$  ( $6622\text{ cm}^{-1}$ ) and  $1.58\text{ }\mu$  ( $6329\text{ cm}^{-1}$ ) corresponding to O-H... as the intensity of these bands changes with the position of the plane of polarization, it may be assumed that they belong to perturbed OH groups with different orientations in the crystal. At  $-180^\circ$ , one finds 5 sharp peaks  $1.50\text{ }\mu$  ( $6667\text{ cm}^{-1}$ ),  $1.51$  ( $6622$ ),  $1.52$  ( $6578$ ),  $1.54$  ( $6494$ ), and  $1.58$  ( $6329$ ). Similarly, in resorcinol, the 2 max. at  $20^\circ$ ,  $1.58$  ( $6329$ ) and  $1.67$  ( $5989$ ) go over into 4 sharp bands,  $1.502$  ( $6281$ ),  $1.62$  ( $6179$ ),  $1.65$  ( $6081$ ),

and  $1.67$  ( $5988$ ). Cryst. urea at  $20^\circ$  has 3 max.  $1.47$  ( $6802$ ),  $1.495$  ( $6677$ ), and  $1.534$  ( $6512$ ), and at  $-180^\circ$ , 5 sharp bands, 2 of which (belonging to the NH<sub>2</sub> groups) coincide with the above 1st two, and the other 3 lie at  $1.457$  ( $6803$ ),  $1.50$  ( $6500$ ), and  $1.56$  ( $6450$ ). The fine structure appearing at low temps. in the cryst. substances was not observed in amorphous substances which show only a shift of the O-H... band to lower frequencies and a redistribution of the intensities of the components of the band. The shift is greatest ( $150-200\text{ cm}^{-1}$ ) for the alcs. MeOH, EtOH, BuOH, and glycerol. In amorphous sucrose, the structure of the O-H... does not change appreciably between  $20^\circ$  and  $-180^\circ$ , as the disordered structure of the amorphous solid is fixed by the manifold H bonds; the same applies to polyvinyl alc. and the phenol-HCHO resin. For the latter 2, the band does change at higher temps., beginning from  $+50$  and  $+60^\circ$  owing to disruption of the H bonds. Absence of the max. at  $1.45\text{ }\mu$  in amorphous sucrose, resorcinol, glycerol, and the alcs. indicates that practically all OH groups are H-bonded. In the resin, there are both free OH (sharp max. at  $1.452\text{ }\mu$ ) and H-bonded OH ( $1.55\text{ }\mu$ ), as in cryst. sucrose. The observed decrease of the intensity of the sharp bands, from  $20$  to  $-180^\circ$ , in the resin and in cryst. sucrose, is due to superposition of the short-wave part of the O-H... band on the peak of free OH, coupled with the shift of the broad band to longer waves with falling temp.

N. Thon

1957

NIKITIN, V. N.

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USSR/Physics - Infrared Spectra,      Sep/Oct 53  
Polymers

"Quantitative Spectral Analysis of Polymers in  
the Infrared Region," V. N. Nikitin, Inst of  
High Mol Comps, Acad Sci USSR

Iz Ak Nauk, Ser Fiz, Vol 17, No 5, pp 644-648

Studies qualitative infrared analysis of rubbers  
and celluloses. Describes methods applied and  
presents results in graphs. Indebted to M. V.  
Volkenshteyn.

274T99

*NIKITIN V. N.*

USSR/Physics - Spectral analysis

Card 1/1      Pub. 43 - 56/62

Authors : Nikitin, V. N., and Pokrovskiy, Ye. I.

Title : Infrared absorption spectra for the determination of crystallinity and melting points of polyethylene

Periodical : Izv. AN SSSR. Ser. fis. 18/6, 735-736, Nov-Dec 1954

Abstract : Data are presented regarding the thermal dependence of band intensities of infrared absorption spectra of polyethylene at temperatures ranging from 20 - 250°C. The measurements were carried out by means of a spectrometer with sodium chloride in role of prism. The method employed in determining the crystallinity of polyethylene is described. The results obtained are reviewed. Six references: 4 USA and 2 USSR (1949-1954). Graphs.

Institution : Acad. of Sc., USSR, Inst. of High Molecular Compounds

Submitted : .....

NIKITIN, V. N.  
USSR/Chemistry

Card 1/1

Authors : Nikitin, V. N., and Yakovleva, T. V.

Title : Studies in the Field of Reversible Isomerism. I. Spectroscopic  
Manifestation of Reversible Isomerism and the Method for Evaluation  
of Results.

Periodical : Zhur. Fiz. Khim. Vol. 28, Ed. 4, 692-696, Apr 1954

Abstract : Studies performed in the field of reversible isomerism by means of  
combined dispersion of oscillation spectra, and use of an infrared  
spectroscopy. The author also presents a method for calculating  
the difference in valence and entropy of reversible isomers. Two  
references; graphs.

Institution : Institute of High Molecular Compounds of the AS of the USSR Leningrad.

Submitted : June 26, 1953

NIKITIN, V. N.

USSR/Chemistry

Card 1/1

Authors : Nikitin, V. N., and Yakovleva, T. V.

Title : Studies in the Field of Reversible Isomerism. II. Reversible Isomerism in Isoprene.

Periodical : Zhur. Fiz. Khim. Vol. 28, Ed. 4, 697-699, Apr 1954

Abstract : A study is presented on reversible isomerism in isoprene in the temperature limits from - 60 to 50°C, and a spectroscopic data on the calculation of the difference in valence and entropy of isoprene isomers. Two references; table; graphs.

Institution : Institute of High Molecular Compounds of the AS of the USSR, Leningrad.

Submitted : June 26, 1953

NIKITIN, V. N.

Determinations of the degree of crystallization and of the fusion temperature of polyethylene by the method of infrared absorption. V. N. Nikitin and E. I. Pokrovskii. *Doklady Akad. Nauk SSSR* 199-10 (1964).—The crystn. of polymers is indicated by the appearance of specific absorption lines in the infrared spectra (Stein and Sutherland, *C.A.* 47, 9775b). For polyethylene the temp. range from 20 to 260° was investigated, a spectrometer with NaCl prism was used. The samples were 0.01 cm. thick. The absorption line 730  $\text{cm}^{-1}$  is particularly characteristic for the cryst. polyethylene, but its measurement is difficult because of the proximity of the 720- $\text{cm}^{-1}$  line. Therefore the line 1308  $\text{cm}^{-1}$  was preferred. It is much intensified during the transition of the crystal to the liquid state. The same line appears also in the fusion of the hydrocarbons  $\text{C}_{10}\text{H}_{22}$ ,  $\text{C}_{12}\text{H}_{26}$ ,  $\text{C}_{14}\text{H}_{30}$ ,  $\text{C}_{16}\text{H}_{34}$ . The curve which shows the transmittance of the 1308- $\text{cm}^{-1}$  line in polyethylene as a function of temp. shows a fusion interval of about 60°. With increasing temp. this interval steadily decreased to a const. value of 35% in agreement with previous dilatometric results. The detn. of the "crystallinity",  $C_c$  in %, below 110° is based on the Lambert-Beer law. The optical measurement eliminates the troublesome errors introduced by the detn. of the thickness of the sample, and that of an undefined mol. wt. For the lines 1308, 730, and 720  $\text{cm}^{-1}$  the transmittance curves are S-shaped with the start and the end of the fusion process as inflection points. W. Bittel



Category : USSR/Atomic and Molecular Physics - Physics of high-molecular substance D-9

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1019

Author : Nikitin, V.N., Vol'kenskteyn, M.V., Volchek, B.Z.

Title : Investigation of the Stretching of Polymers in Polarized Infrared Light

Orig Pub : Zh. tekhn. fiziki, 1955, 25, No 14, 2486-2491

Abstract : The authors derived an equation for the ratio of the coefficient of absorption of two bands at various degrees of tension ( $K'_1/K'_2$ ): ( $K''_1/K''_2$ ), where the indices 1 and 2 pertain to bands  $\nu'_1$  and  $\nu'_2$  and the indices ' and '' pertain to the first and second stretchings. This ratio is unity if the content of the rotation isomers does not change with stretching. The stretching of polyethylene and polyvinyl acetate was investigated. It is shown that at elongations of 1,000% and more, the content of the rotation isomers changes. The stopping of the growth of dichroism at 100% elongation indicates the absence of further orientation.

Card : 1/1

NIKITIN, Y. N.

*Chem* Hydrogen bond in  $\epsilon$ -caprolactam and polycaprolactam.  
Y. N. Nikitin, *Bull. Acad. Sci. U.S.S.R., Div. Chem.*  
Ser. 1980, 67-69 (Engl. translation). -- See C.A. 50, 832nd.  
B.M.R.

*PM*

*NIKITIN, V. N.*

USSR/ Chemistry - Molecular compounds

Card 1/1 Pub. 40 - 16/25

Authors : Nikitin, V. N.

Title : About the hydrogen bond in caprolactam and polycaprolactam

Periodical : Izv. AN SSSR. Otd. khim. nauk 1, 92-97, Jan 1956

Abstract : The infrared absorption spectrum of  $\epsilon$ -caprolactam and polycaprolactam was investigated at a range of  $2400 - 3400 \text{ cm}^{-1}$  and it was found that the 3280, 3220 and  $3080 \text{ cm}^{-1}$  maxima in the  $\epsilon$ -caprolactam are characterized by NH-oscillations included in the hydrogen bond and that the  $3400 \text{ cm}^{-1}$  band observed in this compound when dissolved in carbon tetrachloride pertains to the oscillations of free NH-groups. The effect of temperature on the intensity and arrangement of the maxima characterizing the hydrogen bond in both lactams is discussed. Twelve references: 8 USSR, 3 USA and 1 Eng. (1938-1954). Tables; graphs.

Institution : Acad. of Sc., USSR, Inst. of High Molecular Compounds

Submitted : February 14, 1955

NIKITIN, V.N.; VOLCHEK, B.Z.; LOMTEV-MILYAYEV, L.M.

Instrument for registering infrared absorption spectra by means  
of self-recording potentiometers. Prib.1 tekhn.eksp.no.2:128-129  
S-O '56. (MLBA 10:2)

1. Institut vysokomolekulyarnykh soedineniy AN SSSR.  
(Photoelectric measurements) (Spectrum, Infrared)

NIKIYZA, V. N.

PRIKHOTKO, N. F.

24(7) p. 3 PHASE I BOOK EXPLOITATION SOV/1365

L'vov. Universitet

Materialy I Vsesoyuznogo s'ezhdeniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy. Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Ita: Fizichnyy zbirnyk, vtp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Jazer, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Lavsterg, G.S., Academician (Resp. Ed., Deceased), Neporent, B.S., Doctor of Physical and Mathematical Sciences, Pabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabrikant, V.A., Doctor of Physical and Mathematical Sciences, Kornitskiy, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Milyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

Card 1/30

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NIKITIN, V. N.

7  
Apparatus for the investigation of infrared absorption  
spectra at various temperatures. V. N. Nikitin, *Trudy  
Fiz. Khim.* 1957, No. 1, 118. An app. is described  
which permits investigation of infrared spectra of liquids and  
solids in a temp. interval from -100 to 300°. A. E.

3

4-4

PM 8

Instr. Higher Molecular Compounds AS USSR

NIKITIN, V.N.; VOLCHEK, B.Z.

Determination of polymer glazing temperatures by means of polarized infrared spectra. Zhur. tekhn. fiz. 27 no.7:1616-1617 J1 '57.  
(MLRA 10:9)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR, Leningrad.  
(Polymers)

AUTHORS Volchek, B.Z. Nikitin, V.N. 57-8-26/36  
 TITLE Investigation of Polyamides in the Polarized Infrared  
 Light.  
 (Izucheniye poliamidov v polarizovannom infrakrasnom svete.)  
 PERIODICAL Zhurnal Tekhn. Fiz., 1957, Vol. 27, Nr 8, pp. 1836-1839  
 (USSR)

ABSTRACT The fiber-forming polymeric substances Kapron and AGK  
 (copolymeric substance of the AG salt and of the  
 $\epsilon$ -Kaprolaktam 1:1) were investigated. The authors found  
 out that in Kapron and AGK the  $930\text{ cm}^{-1}$  ( $10.74\mu$ )-band which  
 characterizes just as in nylon the crystalline part of the  
 substance, is present. They also show that this band dis-  
 appears at  $180^{\circ}\text{C}$ . The permeability, of this band increases  
 from  $170^{\circ}\text{C}$  onward. In the case of more than  $180^{\circ}$  the band  
 disappears and the permeability remains constant at 82%.  
 It does not reach 100% because of "funds" in the spectrum.  
 This way the melting temperature of the "crystallites" in  
 the polymer can be determined. In expanded samples band  
 $930\text{ cm}^{-1}$  has a strong dichroism

$$M = \frac{D_{\parallel}}{D_{\perp}}, \quad D_{\parallel} \text{ and } D_{\perp}$$

CARD 1/3 being the optical densities in the case of  $E_{\parallel}$  and  $E_{\perp}$ .



57-8-26/36

# Investigation of Polyamides in the Polarized Infrared Light.

( $E_{\parallel}$  is the electric vector of the light wave oscillating parallel to the axis of expansion and  $E_{\perp}$  - is that of the

other kind oscillating vertically to the axis.) The dichroism increases to the rupture of the film. Its increase with expansion can be connected with the increase of the orientation of the crystallites present. The ratio between the absorption coefficient of the 910 and 1065  $\text{cm}^{-1}$  bands in a not expanded sample and in a sample expanded to  $\sim 1000\%$  was compared. The ratio for both bands showed to be equal to one which points at the unchangeable character of the crystallization degree in the case of an expansion of the sample. In the case of maximally expanded samples which were subjected to a heat treatment at various temperatures, the dichroism was shown to remain constant to  $\sim 86^{\circ}\text{C}$ , and a further rise of temperature was shown to lead to an increase of the dichroism of up to 2,20. This value remains constant to  $\sim 160^{\circ}\text{C}$  and the dichroism disappears at  $180^{\circ}\text{C}$ . Summarizing we can say that an increase of the crystallization degree takes place above the temperature of gas formation, which can be explained with the state of

CARD 2/3

07-8-26/'36

Investigation of Polyamides in the Polarized Infrared Light

dis-equilibrium (With 5 illustrations and 5 Slavic  
references).

ASSOCIATION: Institute for Highly-Molecular Compounds AN USSR.  
(Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
Leningrad)

SUBMITTED: February 9, 1957

AVAILABLE: Library of Congress

CARD 3/3

AUTHORS: Volchek, B. Z., Nikitin, V. N.

SOV/57-58-8-24, 37

TITLE: Investigation of the Process of Guttapercha Stretching by Means of Infrared Absorption Spectra (Issledovaniye protsessa rastyazheniya guttaperchi s pomoshch'yu infrakrasnykh spektrov pogloshcheniya)

PERIODICAL: Zhurnal tekhnicheskoy fiziki, 1958, Nr 8, pp 1753-1758 (USSR)

ABSTRACT: This is an investigation of the infrared spectra of oriented and not oriented guttapercha films in the range of 700 - 1200  $\text{cm}^{-1}$ . An ISP 14 infrared monochromatic spectrometer and a NaCl prism was used in the measurements. The evidence obtained shows that  $\alpha$ - and  $\beta$ -guttapercha are characterized by absorption spectra differing within the range of 700 - 1200  $\text{cm}^{-1}$ . The melting points of  $\alpha$ - and  $\beta$ -guttapercha were determined from the disappearance of the bands corresponding to the crystalline state with rising temperature. When crystalline  $\alpha$ -guttapercha is stretched,  $\beta$ -guttapercha is formed. This means that a rotational isomer to which corresponds a more stretched chain is produced. The stretching of  $\beta$ -guttapercha

Card 1/2

SOV/57-58-8-24/37

Investigation of the Process of Guttapercha Stretching by Means of Infrared Absorption Spectra

is most probably based upon an increase of the content of isomers with a more stretched chain in the amorphous part. There are 6 figures, 2 tables, and 12 references, 9 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR Leningrad (Institute of High-Molecular Compounds AS USSR, Leningrad;

SUBMITTED: January 7, 1958

Card 2/2

NIKITIN, V. N.

79-2-54/64

AUTHORS: Kuznetsov, S. G., Nikitin, V. N.

TITLE: Investigation of Hydrogen Binding in Some Cholinolytic Substances by Means of the Infrared Absorption Spectrum (Issledovaniye vodorodnoy svyazi v nekotorykh kholinoliticheskikh veshchestvakh s pomoshch'yu infrakrasnykh spektrov pogloshcheniya).

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 2, pp. 525-528 (USSR)

ABSTRACT: On the occasion of investigations of the properties of cholinolytic substances of the atropine type and its analogs it is maintained that the hydrogen of the hydroxyl group of the substance enters into a donor - acceptor interaction with a donor electron of the corresponding biochemical structure of the organism. Also from other sides the strong influence of the hydrogen binding on the physiological effect of a series of compounds is pointed out. For this reason three substances are spectroscopically investigated in the present work. One of them, with known activity,  $\beta$ -diethyl-amino-ethyl-ether of the benzyl acid (in America WIN 5606) is used as comparison substance. The second substance "trazentine", in Russia known as "spazmolitine", is less active. The third

Card 1/3

Investigation of Hydrogen Bindings in Some  
Cholinolytic Substances by Means of the Infrared  
Absorption Spectrum

79-2-54/64

differs from the first by the fact that the CO-group was replaced by a CH<sub>2</sub>-group. The infra-red absorption spectra were recorded on a MKC-14 spectrometer with a LiF-prism in the range of 2.7 - 3.5  $\mu$  and the results were graphically represented. In the case of the first substance a broad band in the range of 3.2 - 3.0  $\mu$  was observed which indicated the hydrogen binding and disappeared at approximately 60°C while a narrow band was formed at 2.870  $\mu$  which characterized the free hydroxyl oscillations. This phenomenon proves an intermolecular hydrogen binding. In the case of the second substance no absorption was observed in the 3.2 - 2.8  $\mu$  range corresponding to the absence of OH-groups. Like the first also the third substance showed an absorption band at 3.2 - 3.0  $\mu$  corresponding to the OH group, however, no new absorption band corresponding to the OH oscillations was observed on the occasion of heating to 100°C. For this reason an inner molecular hydrogen binding is assumed. It can be seen from the results that only the first substance has the ability to form stable intermolecular bindings since the second

Card 2/3

Investigation of the Hydrogen Bindings in Some  
Cholinolytic Substances by Means of the Infrared  
Absorption Spectrum

79-2-14/64

has no hydroxyl group and that the third is inactivated by the formation of inner molecular hydrogen bindings. Since the first substance has the highest cholinolytic activity the important role of the hydroxyl group is proved to a certain degree.

There are 1 figure, 1 table, and 9 references, 4 of which are Slavic.

ASSOCIATION: All-Union Scientific Research Institute for Sanitation  
Chemistry. (Vsesoyuznyy nauchno-issledovatel'skiy  
sanitarno-khimicheskiy institut).

SUBMITTED: February 8, 1957

AVAILABLE: Library of Congress

Card 3/3

SOKOLOVA, T.A.; CHETYRKINA, G.M.; NIKITIN, V.N.

Hydrogen bond and polymerization capacity of o-, m- and p-substituted N-phenylmethacrylamides. Part III. Vysokom.sped. 1  
no.4:506-510 Ap '59. (MIRA 12:9)

1. Institut vysokomolekulyarnykh soedineniy AN SSSR.  
(Bonds(Chemistry)) (Polymerization) (Methacrylamide)



NIKITIN, V.N.; VOLKOVA, L.A.; MIKHAYLOVA, M.V.; BAKLAGINA, Yu.G.

Two crystalline modifications of 1,4-trans-polybutadiene. *Vysokomol. Soedin.* 1 no.7:1094-1099 J1 '59. (MIRA 12:11)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
(Butadiene)

SOKOLOVA, T.A.; CHETYRKINA, G.M.; NIKITIN, V.N.

Hydrogen bond and the polymerization capacity of o-, m-, and  
p-substituted N-phenylmethacrylamides. Part 4. Vysokom.soed.  
1 no.11:1599-1603 N '59. (MIRA 13:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
(Methacrylamide) (Hydrogen)

5(3)

AUTHORS:

Sokolova, T. I., Nikitin, V.

SV 6-19-3-19/37

TITLE:

Hydrogen Bond and Polymerization Properties of o-, m-, and p-Alkoxy-phenylmethacrylamides (Vodorodnyy svyaz' i sposobnost' k polimerizatsii orto-, meta- i para-alkoksi-fenilmetakrilamilov) Communication 1 (Soobshcheniye 1)

PERIODICAL:

Izvestiya Akademii nauk SSSR Otdeleniye khimicheskikh nauk, 1959, Nr 3, pp 111-115 (USSR)

ABSTRACT:

In the present paper the attempt was made to explain the effect of the hydrogen bond on the capability of the monomer of undergoing polymerization in the mass. A number of N-alkoxy-phenylmethacrylamides was investigated: ortho-, meta-, and para-ethoxyphenylmethacrylamides and ortho-, meta-, and para-methoxyphenylmethacrylamide. Synthesis and properties of these compounds had been described previously (Refs 8,9). In the investigation of the polymerizability of the monomers synthesized it was found that the rate of their polymerization was different. The experimentally obtained data are presented in table 1 (L. A. Gvstyannikova took part in this work). It was found that the ortho-isomers of alkoxy-phenylmethacrylamides easily polymerize. para-isomers polymerize

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Hydrogen Bond and Polymerization Properties of                      SOV/ 2-19-3-19/37  
o-, m-, and p-Alkoxy-phenylmethacrylamides: Communication 1

more difficultly and meta isomers polymerize under the same conditions quite insignificantly. In order to explain this difference their infrared absorption spectra were investigated. In the range 2.8-3.2  $\mu$  infrared absorption spectra of all monomers synthesized in solid and molten state as well as in  $\text{CCl}_4$ -solution were obtained (Table 2). These spectra indicated that in meta- and para-isomers an intermolecular hydrogen bond occurs. In ortho-isomers such a bond is lacking. In comparing the results obtained it was found that the polymerization of isomers without hydrogen bond proceeds readily. In meta- and para-isomers having a hydrogen bond the polymerization is rendered difficult. Accordingly the polymerizability of these isomers is reduced by the hydrogen bond. In the presence of such a bond the reactivity can be reduced both due to steric reasons and to the small mobility of associated molecules, i.e. if only little collisions take place between active molecules. It is further not impossible that under the influence of the hydrogen bond the electronic density in the vinylgroup varies which must affect the activity of this group.

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Hydrogen Bond and Polymerization Properties of 000/62-59-3-19/37  
o-, m-, and p-alkoxy-phenylmethacrylamides. Communication 3

There are 2 figures, 2 tables, and 11 references, 9 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR  
(Institute of High-molecular Compounds of the Academy of Sciences, USSR)

DATE ISSUED: July 1, 1977

Card 3/3

SOV/120-59-4-43/50

AUTHOR: Nikitin, V. N.

TITLE: ~~An Adjustable-Thickness Cell for the Infrared~~

PERIODICAL: Priory i tekhnika eksperimenta, 1959, Nr 4, p 151 (USSR)

ABSTRACT: Fig 1 shows an exploded view of the cell. The two hollow cylinders 4 and 9 are made of stainless steel; the latter is fitted with a tightly adhering grooved teflon jacket 10. This assembly fits tightly into cylinder 4 and seals the working space. The number of grooves in 10 controls the friction; the grooves absorb any dust etc. The maximum distance between the windows 2 and 7 is 15 mm; the working volume is 35 mm in diameter. The rock-salt windows are 40 mm in diameter. The insert 3 is of amalgated tin foil, or of teflon or polythene; 1 is the pressure nut. The filling tube 5 is closed by a threaded teflon stopper. The threaded parts of 4 have a pitch of 1 mm, as does the adjusting head 12. The scale 11 has 100 divisions. Ring 6 holds the window 7 and the insert 8 to the cylinder 9. Three screws hold 12 to the cylinder 9. It is stated that the cell shows no appreciable leak over several hours with ether.

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SOV/120-59-4-43/50

An Adjustable-Thickness Cell for the Infrared

Some tests show that, although the windows are not strictly parallel, the agreement with a fixed (0.06 mm) cell is very good. The paper contains 1 figure and 2 references, 1 of which is English and 1 Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR  
(Institute of Macromolecular Compounds of the Academy of Sciences USSR)

SUBMITTED: July 7, 1958.

Card 2/2

5(4), 24(7)

SOV/20-124-4-40/67

AUTHORS:

Mikitin, V. N., Rakova, G. V., Mikhaylova, U. V.

TITLE:

The Infrared Spectra of the Absorption of Ethyl Lithium  
Dissolved in Benzene Hexane, and Diethyl Ether (Ob infra-  
krasnykh spektrakh pogloshcheniya etillitiya; rastvorennogo  
v benzole, geksane i dietilovom efire)

PERIODICAL:

Doklady Akademii nauk SSSR 1959. Vol 124 Nr 4, pp 873-876  
(USSR)

ABSTRACT:

It is to be expected that the electron-acceptor oxygen of  
ether is able to form a new complex with the ethyl lithium  
The crystalline ethyl lithium was produced from metallic  
lithium and ethyl chloride in a benzene solution, after which  
the solvent was removed. All operations were carried out in  
an atmosphere of dry purified nitrogen. The ethyl lithium  
produced in this way was dissolved in benzene, hexane, and  
diethyl ether. The absorption spectrum of the dissolved ethyl  
lithium was recorded by means of a single-beam infrared  
spectrometer with an NaCl prism. The spectrum of the ethyl  
lithium dissolved in benzene is shown by a diagram. The authors  
investigated also the ratio of optical densities of the  
 $C_2H_5Li$ -absorption bands at 2 concentrations in order to find  
out whether the ethyl lithium molecules are associated in the

Card 1/3



SOV/20-124-4-40/67

The Infrared Spectra of the Absorption of Ethyl Lithium Dissolved in Benzene, Hexane, and Diethyl Ether

benzene solution. The frequencies 1104 and 1054  $\text{cm}^{-1}$  are probably connected with the valence oscillations of C-C-Li of the free molecule, but the frequencies 968 and 926  $\text{cm}^{-1}$  may be ascribed to the oscillations of C-C-Li of associated molecules. Comparisons are made with the results obtained by other authors. The second diagram shows the absorption spectrum of the  $\text{C}_2\text{H}_5\text{Li}$  absorbed in hexane, and in this case the same absorption bands are found as in benzene. A further curve shows the spectrum of ethyl lithium dissolved in diethyl ether. Also in this case the absorption of the solvent was eliminated. A comparison of the  $\text{C}_2\text{H}_5\text{Li}$  spectra in benzene and ether shows that the position and the number of absorption bands in the dissolution of ethyl lithium in ether changes considerably. These changes are probably due to the formation of associates of ethyl lithium ether. The authors furthermore investigated the absorption spectrum of  $\text{C}_2\text{H}_5\text{Li}$ , which was dissolved in benzene with an addition (7%) of diethyl ether. Also in this case the aforementioned absorption bands are observed. Finally, the absorption spectrum of  $\text{C}_2\text{H}_5\text{Li}$  was

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SOV/20-124-4-40/67

The Infrared Spectra of the Absorption of Ethyl Lithium Dissolved in Benzene, Hexane, and Diethyl Ether

investigated which was dissolved in dioxane. According to the results obtained by these experiments  $C_2H_5Li$  enters into chemical reaction with dioxane at room temperature. The authors thank A. A. Korotkov for proposing the subject and M. V. Vol'kenshteyn for his useful advice. There are 1 figure and 7 references, 6 of which are Soviet.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR (Institute for High-molecular Compounds of the Academy of Sciences, USSR)

PRESENTED: September 23, 1958, by A. N. Terenin Academician

SUBMITTED: September 17, 1958

Card 3/3

NIKITIN, V.N.; VOLCHEK, B.Z.

Spectroscopic manifestations of hydrogen bonding in polyamides.  
Vysokom.soed. 2 no.7:1015-1019 J1 '60. (MIRA 13:8)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.  
(Hydrogen bonding--Spectra)  
(Polyamides--Spectra)

NIKITIN, V.N., kand.fiziko-matematicheskikh nauk; VOLCHEK, B.Z.

Study of polymers by infrared spectroscopy. Zhur.VKHO 6 no.4:374-  
382 '61. (MIRA 14:7)

(Polymers--Spectra)

V

S/192/62/003; 003/001/006  
0228/0307

AUTHORS: Yu Pao-shan, Nikitin, V.N., and Vol'kenshteyn, M. V.

TITLE: Spectroscopic study of substituted acryl- and methacryl amides and their reaction capacity on polymerization

PERIODICAL: Zhurnal strukturnoy khimii, v. 3, no. 3, 1962, 387-391

TEXT: Spectroscopic methods -- combination scattering and absorption in the IR- and UV-regions -- were used to study the multiple bond conjugation and the intermolecular hydrogen bonds in methylacrylamide (I), methylmethacrylamide (II), dimethylmethacrylamide (III), and diethylmethacrylamide (IV). The presence of intermolecular hydrogen bonds was established in I and II, and it was shown that the hydrogen bonds substantially influence the degree of conjugation. The reaction capacity of these compounds in the process of initiated thermal polymerization, which was determined by G. M. Chetyrkina, conforms to the degree of conjugation ascertained from the spectral combination-scattering intensity and from

Card 1/2

spectroscopic study of ...

3/12/62, 553, 554, 555, 556,  
5228/5307

the refraction exaltation. The degree of conjugation -- I, II, III, IV -- grows as the reaction capacity increases. There are 4 figures and 1 table.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy AN SSSR,  
Leningrad (Institute of Highmolecular Compounds,  
AS USSR, Leningrad)

SUBMITTED: May 19, 1961

Card 2/2

NIKITIN, V.N.; MAKLAPOV, L.I.

Raman spectrum of isotactic polypropylene. Opt. i spektr.  
13 no.4:603-604 0 '62. (MIRA 16:3)  
(Raman effect)  
(Propene)

S/032/62/028/001/004/017  
B124/B138

AUTHORS: Nikitin, V. N., and Volchek, B. Z.

TITLE: Infrared spectroscopic study of polymers

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 1, 1962, 49 - 55

TEXT: This paper surveys literature published on the chemical structural analysis of various polymers (polybutadiene, polyisoprene, gutta percha, natural rubber, polyethylene, polyvinyl chloride and polyvinylidene chloride together with copolymers, polyvinyl alcohol, polystyrene, polyethylene terephthalate, polytetrafluoroethylene, polytrifluoromono-chloroethylene, cellulose and its derivatives), determination of crystallinity, rotational isomerism, detection of hydrogen bonds and stereoregularity of polymers using infrared absorption spectra as well as on the use of polarized infrared light. This article was the subject of a lecture on the Soveshchaniye po spektroskopii (Conference on Spectroscopy) in Gorkiy. July 5 - 12, 1961. M. P. Burgova and A. A. Korotkov (Ref. 14: Izv. AN SSSR, 14, 452 (1950)), Ye. I. Pokrovskiy (Ref. 36: Izv. AN SSSR, ser. fiz. 6 (1954)), M. V. Vol'kenshteyn (Ref. 60: Zhurnal fizicheskoy khimii,

Card 1/2



S/032/62/028/001/004, 017  
B124/B138

Infrared spectroscopic...

26, 1072 (1952)), V. Kovey and S. Tsutsumi (Ref. 94: Chem. High. Polymer Sci. 17, 184 (1960)) are mentioned. There are 6 figures, 2 tables, and 105 references: 36 Soviet and 69 non-Soviet. The four most recent references to English-language publications read as follows: C. Liang, R. Marchessault. J. Polymer Sci., 43, 71 (1960); P. Burleigh. J. Am. Chem Soc., no. 5, 749 (1960); J. Brader. J. Appl. Polymer Sci., 2, 370 (1960); S. Krimm. J. Chem. Phys., 32, 3131 (1960).

Card 2/2

S/076/62/036/CC4/002/012  
B1C1/B11C

11.11.60

AUTHORS: YU Pao-shan , Nikitin, V. N., and Vol'kenshteyn, M. V.  
(Leningrad)

TITLE: spectra and thermal polymerization reactivity of styrene derivatives

PERIODICAL: Zhurnal fizicheskoy khimii, v. 36, no. 4, 1962, 681-689

TEXT: The effect of the conjugation of the double bond in styrene and its derivatives on the activation energy of the initiation of radical polymerization was studied. The infrared spectra of pure compounds as well as the Raman spectra of compounds dissolved in  $\text{CCl}_4$  (1 molecule monomer per 5 molecules  $\text{CCl}_4$ ) were recorded. In determining the differential intensity of the Raman lines, the intensity of the  $459 \text{ cm}^{-1}$  line of  $\text{CCl}_4$  was taken as being 100. The following data are given for the intensity of the line characterizing the C-C bond:

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Spectra and thermal polymerization ...

S/C76/b2/C36/CG4/G02/012  
B101/B110

Compound	Raman spectrum			Infrared spectrum Intensity
	F	D	I	
Styrene	1631	130	59	30
p-methyl styrene	1631	150	102	33
o-methyl styrene	1625	94	73	43
a-methyl styrene	1633	75	57	27
p-chloro styrene	1634	170	141	36
o-chloro styrene	1631	88	65	45
2-chloro-3,5- dimethyl styrene	1629	97	61	60
2,3-dichloro-4,5- dimethyl styrene	1631	93	74	65
penta chloro styrene	1635	-	-	-

Legend: F = frequency,  $\text{cm}^{-1}$ ; D = differential intensity; I = integral intensity. From these data there follows a strong dependence of the intensity of the C=C bond Raman line on the degree of conjugation with the benzene ring and its substituents. The intensity of the infrared spectrum shows the same dependence, but is less sensitive. A dependence of the

Card 2/3

Spectra and thermal polymerization ...

S/076/62/036/004/002/012  
B101/B110

activation energy (AE, kcal/mole) on the intensity D of the Raman lines was also found:  $\alpha$ -methyl styrene (does not polymerize), D = 75; styrene AE = 22.0, D = 130; p-methyl styrene AE = 16.0, D = 150; p-chloro styrene AE = 14.6, D = 178. Thus, the effective AE characterizes the reactivity of the monomer. There are 3 figures and 5 tables.

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR (Institute of High-molecular Compounds of the Academy of Sciences USSR)

SUBMITTED: May 30, 1960

Card 3/3

X

ACCESSION NR: AP4009470

3/0051/63/015/006/0822/0824

AUTHOR: Maklakov, L.I.; Nikitin, V.N.

TITLE: Vibrational spectra of bromoform and deuterobromoform in the liquid and crystalline states

SOURCE: Optika i spektroskopiya, v.15, no.6, 1963, 822-824

TOPIC TAGS: Raman spectrum, infrared spectrum, bromoform, deuterobromoform, crystal liquid transition

ABSTRACT: The vibrational spectra of bromoform and deuterobromoform were investigated with the substances in the liquid and crystalline states; also obtained were the spectra of mixed crystals. The infrared spectra were recorded at different temperatures on a UR-10 double beam spectrometer. A special cell constructed in the laboratory was used for the temperature studies. The Raman spectra were recorded on a DFS-12 spectrometer with excitation by the Hg 4358 Å line. Here again a special cell which permitted measurement of the spectrum at different temperatures was employed. The deuterobromoform was prepared by the procedure described by S.M.Perigle and F.F.Cleveland (J.Chem.Phys.18,1073,1950); analysis of the pro-

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AP4009470

duct with reference to the 3020  $\text{cm}^{-1}$  infrared band showed the presence of 9%  $\text{CHBr}_3$ . The infrared spectrum of the deuterobromoform agreed with the data of Ferigle and Cleveland. Traces of the infrared absorption spectra of  $\text{CHBr}_3$  at 18°C and -100°C are reproduced. [Abstracter's note: The Raman spectra are not shown.] Attributions are made for some of the lines observed in the spectra and the changes observed incident to transition from the liquid to the crystalline state are discussed. The changes are appreciable in the case of the infrared spectrum but virtually nil in the case of the Raman spectrum. "We express our gratitude to A.V. Purkina for assistance in the work and to Yu.Ya.Gotliv and M.V.Vol'kenshteyn for discussion of the results." Orig.art.has: 1 figure.

ASSOCIATION: none

SUBMITTED: 04Apr63

DATE ACQ: 03Jan64

ENCL: 00

SUB CODE: PH

NR REF SOV: 005

OTHER: 009

2/2

Card

S/020/63/148/003/031/037  
B101/B186

AUTHORS: Nikitin, V. N., Mikhaylova, N. V.

TITLE: Manifestation of the crystal structure of isotactic polymethyl methacrylate in infrared absorption spectra

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 148, no. 3, 1963, 624 - 626

TEXT: Amorphous isotactic polymethyl methacrylate (PMMA) obtained by polymerization of methyl methacrylate with butyl lithium in toluene at  $-60^{\circ}\text{C}$  was dissolved in chloroform; films of  $\sim 10\mu$  thickness were prepared on NaCl plates and their IR spectrum was plotted. The following absorption bands were found: 755, 840, 955, 995, 1150, 1192, 1263, 1390, 1445,  $\sim 1580$ , and  $1730\text{ cm}^{-1}$ . The weak  $1580\text{ cm}^{-1}$  band appeared only in thicker films. Two distinct absorption bands appeared at  $1580$  and  $1560\text{ cm}^{-1}$  after swelling the film in 4-heptanone for 16 hrs at  $20^{\circ}\text{C}$  and removing the solvent. The x-ray pattern showed a distinct difference from that of the initial amorphous PMMA because crystallization had occurred. Only a broad  $1580\text{ cm}^{-1}$  band appeared when the crystalline film was heated to  $220^{\circ}\text{C}$  for 2 hrs and the spectrum

Caru 1/2

Manifestation of the crystal...

S/020/63/148/003/031/037  
B101/B186

was taken at 20°C. The x-ray pattern showed much reduced crystallinity. Only repeated swelling in 4-heptanone made appear the separate, distinct 1580 and 1560  $\text{cm}^{-1}$  bands. They were also maintained when PMMA was dissolved in chloroform, but then they were less intensive. Films produced from this solution also showed these bands, and their x-ray pattern corresponded to that of crystalline PMMA. It is assumed that the 1580 and 1560  $\text{cm}^{-1}$  bands characterize the helical configuration of isotactic PMMA which was described by J. D. Stroupe and R. E. Hughes (J. Am. Chem. Soc., 80, 2341 (1958)). There are 2 figures. ✓

ASSOCIATION: Institut vysokomolekulyarnykh soyedineniy Akademii nauk SSSR  
(Institute of High-molecular Compounds of the Academy of Sciences USSR)

PRESENTED: October 15, 1962, by A. N. Terenin, Academician

SUBMITTED: October 2, 1962

Card 2/2



NIKITIN, V.N.; SHARONOVA, N.A.

Spectroscopic study of hydrogen bonding in polymers of *o*- and *p*-carbethoxyphenylmethacrylamide and the molecular chain conformation. Vysokom. soed. 6'no.1:144-148 Ja'64. (MIRA 17:5)

1. Institut vysokomolekulyarnykh soyedineniy AN SSSR.

L 40571-65 EPA(s)-2/EWP(k)/EWA(c)/EWI(m)/EWP(b)/T/EWA(d)/EWP(w)/EWP(r)/EWP(t)  
 PE-L TJP(c) EH/JD/104/JT  
 ACCESSION NR: AP5002944 S/0129/65/000/001/0033/0038

AUTHOR: Gulyayev, A.P.; Nikitin, V.N.

TITLE: Influence of carbon, silicon and manganese on the embrittlement tendency of steel and iron

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 1, 1965, 33-38

TOPIC TAGS: steel embrittlement, iron embrittlement, silicon brittleness, carbon brittleness, manganese brittleness, brittle failure, impact toughness, cold brittleness threshold

ABSTRACT: The purpose of this work was to determine the cold brittleness threshold in low-carbon steel and iron due to C, Si or Mn additions. As a criterion, the authors used the percentage of the viscous and brittle components causing the break. Since crystalline break is the result of brittleness, while fibrous break is the result of viscosity, the proportion of their areas in the break can be used as a criterion. Ingots were forged into billets and the latter rolled into 12 mm thick plates from which samples were cut across the direction of rolling, annealed and subjected to tensile and impact bending tests. It was found that the influence of the three elements (C, Si and Mn) on the brittleness threshold is different. Si strengthens steel but increases the threshold.

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L 40971-65

ACCESSION NR: AP5002844

of cold brittleness. Mn also improves the steel strength but lowers the threshold of cold brittleness. C is the most energetic strengthening agent. Its increased content impairs the impact toughness, although it is still high under conditions of viscous destruction ( $> 8\text{kg/cm}^2$ ). The cold brittleness threshold is not affected by carbon addition. Therefore C can be used as a strengthening agent in low alloy steel up to an acceptable level of weldability. All of the above applies only to steels with a ferrite-perlite structure and is not to be applied to steels with an annealed martensite structure. Orig. art. has: 5 figures and 2 tables.

ASSOCIATION: TsNIChERMET

SUBMITTED: 00 ENCL: 00

SUB CODE: MM

NO REF SOV: 003 OTHER: 000

Card 2/2 mB

GULYAYEV, A.I.; NIKITIN, V.N.

Comparison of various methods for determining the resistance  
of steels to brittle fracture. Izv. Akad. Nauk SSSR, 1974, No. 1, p. 18.

1. Centralnyy nauchno-issledovatel'skiy institut Chernoy  
Metallurgii imeni Khar'kova.

MAKLAKOV, L.I.; NIKITIN, V.N.

Raman spectrum of isotactic polypropylene in the crystalline and molten states. Opt. i spekt. 17 no.3:452-45. 1976.

(MIRA 17 10)

NIKITIN, V.N.; LEVDIK, I.Yu.

Absorption bands of collagen in the  $900\text{ cm}^{-1}$  region. Zhur.  
prikl. khim. 38 no. 10:2366-2368 0 '65. (MIRA 18:12)

1. Submitted April 20, 1964.

GULYAYEV, A.P.; NIKITIN, V.N.

Determining the quality of steel from impact test results for  
notched specimens. Zav. lab. 30 no. 7-286, 489 '62. (MIRA 18 3)

1. Tsentral'nyy nauchno-issledovatel'skiy institut Chernoy  
metallurgii imeni Bardina.

2431  
S/185/61/006/002/003/020  
D210/D304

2/16000  
AUTHORS:

Vatset, P.I., Vlasenko, V.M., Voloshchuk, V.Y.,  
Doroshenko, M.A., Kolesnikov, L.Ya., Nikitin, V.O.,  
and Tonapetyan, S.B.

TITLE: A diffusion cloud chamber

PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 6, no. 2, 1961,  
168 - 173

TEXT: The authors describe the construction and operation of methanol in an air diffusion chamber. This chamber was built as an experimental model for a larger chamber for use with a linear electron accelerator. The chamber (Fig. 1) has a working diameter of 26 cm and an effective height of 6 cm. It is made of stainless steel and consists of three sections: the lower cylinder 1, the cone 2, and the upper cylinder 3. The internal diameter of the lower cylinder is 30 cm and of the upper 22 cm, and the height of the chamber is 80 cm. At the base of the chamber there is a copper condensation disc 4, whose surface has been chemically blackened. This disc is

Card 1/5



A diffusion cloud chamber

77131  
S/185/61/006/002/003/020  
D210/D304

cooled by passing liquid nitrogen through a coil (5) soldered onto the bottom of the disc. A glass cylinder (6), 26 cm diameter, 10 cm high, and 4 mm thick is held firmly against the copper disc with the copper cone, thus ensuring a good temperature contact. The temperature distribution in the central section is effected by electrically heating the flanges of the cone, the lower flange temperature corresponding to the methanol temperature. The cone and the lower ring is separated by a heat insulator 7, the bolts (8) being similarly insulated. Thermocouple and electrode connections are made through the insulating ring, the screen 9 being connected by glass rods to the electrodes. Two windows (10) made from organic glass are situated diametrically opposite each other for illuminating the chamber space. The methanol is fed to the chamber through the lead 12, and it is held in the groove 11 of capacity 300 cm<sup>3</sup>, the evaporation being enhanced by filter papers placed in the groove. The methanol temperature is controlled with a thermocouple which enters the chamber through 13. Two windows (14) are provided for photographing the working volume and one (15) for visual ob-

4/5

3

7431

S/185/61/006/002/003/020  
D210/0304

A diffusion cloud chamber

ervation. The upper part of the chamber is held at a higher temperature to prevent condensation of methanol on the windows which can cause a high background. The operation of the chamber is controlled by automatically varying the liquid nitrogen flow rate, the methanol temperature, and the temperature of the upper flange of the lower cylinder. The chamber was tested with an air and methanol filling at 1 and 3.5 at. It could be operated at a bottom temperature of -45 to -70°C and a methanol temperature of 10 to 30°C. However, the most satisfactory temperatures were found to be -50 and 20°C respectively, giving a temperature gradient in the working space of 7 deg/cm. At an alcohol temperature above 20°C the droplet background was high; when the temperature fell to 0 to 10°C the vapor flow was insufficient for satisfactory operation of the chamber. The authors have given in this paper a good description and diagrams of the supporting equipment for pumping the liquid nitrogen and feeding methanol to the diffusion chamber. The authors state that they are preparing at the moment a larger chamber with a diameter of 30 cm and a working pressure of 30 at.

Card 3/5

A diffusion cloud chamber

11.31  
S/185/61/006/002/001/020  
D210/D364

There are 6 figures and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The references to the English-language publications read as follows: A. Langsdorf, Rev. Sci. Instr., 10, 91, 1939; Sautt, Rev. Sci. Instr., 22, 750, 1951. X

ASSOCIATION: Fizyko-tekhnichnyy Instytut, AN URSR, m. Kharkiv  
(Technical Physics Institute, AN UkrSSR, Khark'kov)

SUBMITTED: July 1, 1960

Card 4/5

S/185/61/006.001.004  
DP10/D304

21.6000

AUTHORS: Vatset, P.I., Voloshchuk, V.Y., Kolesnykov, V.Y.,  
Nikitin, V.O., and Tonapetyan, S.H.

TITLE: A liquid hydrogen bubble chamber

PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 6, no. 2, 1965,  
175 - 181

TEXT: The authors describe the construction and operational characteristics of an experimental liquid hydrogen bubble chamber of 500 cm<sup>3</sup> capacity. The object of this work was to have a model chamber for constructing a larger liquid hydrogen bubble chamber. The bubble chamber with the associated equipment is shown in Fig. 1, where 1 is the chamber itself, 10 cm diameter and 5 cm high, is a cup containing a brass siphon 3. Photography and identification are carried out through windows 4, made of Pyrex glass. The windows are sealed with a copper gasket of special configuration. 5. Copper gaskets were found to be more reliable than lead.

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# A liquid hydrogen bubble chamber

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well as being reusable. The chamber is contained in the liquid hydrogen thermostat 6 which is connected with the reservoir 7. The temperature of the thermostat is controlled with special pressure stabilizer 8, which consists of a closed glass or metal vessel containing a small rubber tube along its length. This tube is part of the circuit connecting the hydrogen reservoir 7 with a gas cylinder. Nitrogen gas admitted to the cylinder under a certain critical pressure, restricts the flow of hydrogen from the reservoir until the critical pressure is exceeded. This restriction is released when a better flow is required. The hydrogen reservoir is surrounded with a coil of nitrogen temperature which is connected with a coil of liquid nitrogen 9 and a screen 10. This whole assembly of copper and steel is contained in a high vacuum chamber which is evacuated by means of a diffusion pump. At the bottom of the chamber activated charcoal is placed in the bottom of the system. The liquid level in the hydrogen and nitrogen reservoirs is controlled by means of a hydrostatic level gauge filled with liquid. The temperature of liquid hydrogen is maintained

Diagram

2<sup>1</sup>:32

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A liquid hydrogen bubble chamber

conductor is inserted inside it. Superheating of liquid hydrogen in the chamber is achieved by reducing pressure with sylphon mechanism 14, 15. The pressure on the upper sylphon is applied through the electromagnetic valve 16 and the magnitude of movement is controlled by means of the regulator 17. A detailed description of the electromagnetic valve is given. Gaseous hydrogen purified silica gel and activated charcoal is fed to the chamber through the precooler 18 and the needle valve 19, and the pressure in the chamber is measured by the gauge 20. The authors have given a brief description of bringing the chamber into operation. The chamber was operated over a temperature range of 27 to 30°K (corresponding to a vapour pressure of 4.5 to 8 at.) and a working cycle of 2 seconds. It was found that by constant superheating, the sensitivity of the chamber increased with temperature. The sensitivity also varied with the amplitude of superheating, and it was possible to make the chamber insensitive to relativistic particles. The consumption of liquid hydrogen was 15 l. for cooling and half a liter for each hour of operation. 60 l. of liquid nitrogen was

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A liquid hydrogen bubble chamber

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D210/D304

also required for 10 hours of operation and initial cooling. For lighting the chamber a pulse lamp 27 was used. To give a good illumination of the chamber light passed through a venetian blind 28, made of 2 mm organic glass, 10 mm wide, glued together to make an angle of  $30^{\circ}$  with the window. [Abstractor's note: The angle should probably read  $60^{\circ}$ ]. There are 5 figures and 4 references: 2 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: H.P. Hernander, I.W. Mark, R.D. Watt, Rev. Sci. Instr. 28, 528, 1957

ASSOCIATION: Fizyko-tekhnich-nyy instytut, AN URSR, m. Kharkiv  
(Technical Physics Institute, AS UkrSSR, Khar'kov)

SUBMITTED: July 1, 1960

Card 4/5

2<sup>1433</sup>  
S/185/61/006/002/005/020  
D210/D304

21.6000

AUTHORS: Vatset, P.I., Voloshchuk, V.Y., Kolesnykov, L.Ya.,  
Nikitin, V.O., and Tonapetyan, S.H.

TITLE: 11 liter propane bubble chamber

PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 6, no. 2, 1961,  
182-185

TEXT: The authors review the advantages and simple theory of bubble chambers and they describe a propane bubble chamber which has a capacity of  $34.0 \times 20.4 \times 16.0 \text{ cm}^3$ , and is intended for use in a magnetic field of 12000 gauss. The chamber has two windows,  $37 \times 34 \times 7 \text{ cm}^3$  made of hardened optical glass. Pressure is applied to the working liquid hydraulically with the help of compressed air. The pressurizing unit 1 consists of two electromagnetic valves 2, 3, and the pressure-drop to a preset level is controlled by means of the regulator 5. The working temperature of the chamber is  $64^\circ\text{C}$ , corresponding to a vapor pressure of 24 at. This temperature is

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11 liter propane bubble chamber

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D210/D304

maintained constant by thermostating the chamber, the hydraulic duct 6, the pressure controller 1, and the compressed air reservoir 4. Unlike other bubble chambers this one has a vacuum duct 8, passing through the working liquid, for admixing with the liquid solid, liquid, or gaseous substances for investigation. Two types of lighting were tried. One was lighting through a venetian blind block, while the other consisted of passing the light through a polarizer and photographing it through an analyses. The chamber was assigned for a study of the interaction of electrons,  $\gamma$ -rays, and mesons with hydrogen, carbon and other nuclei. Under certain circumstances the chamber with the vacuum duct can be used for scattering electrons with electrons. There are 1 figure and 8 references: 4 Soviet-bloc and 4 non-Soviet-bloc. The references to the English-language publications read as follows: D.A. Glaser, Phys. Rev., 87, 665, 1952; D.A. Glaser, Phys. Rev., 91, 762, 1952; L.O. Oswald, W.M. Powelle, W.B. Folwer, Rev. Sci. Instr., 29, N10, 874, 1958; Hilding Slutz, Nucler Instr.. 5, N 1, 1959. X

Card 2/4

11 liter propane bubble chamber

2433  
S/185/61/006/002/005/020  
D210/D304

ASSOCIATION: Fizyko-tekhnichnyy instytut, AN URSR, m Kharkiv  
(Technical Physics Institute, AS UkrSSR, Khar'kov)

SUBMITTED: July 1, 1960

Card 3/4

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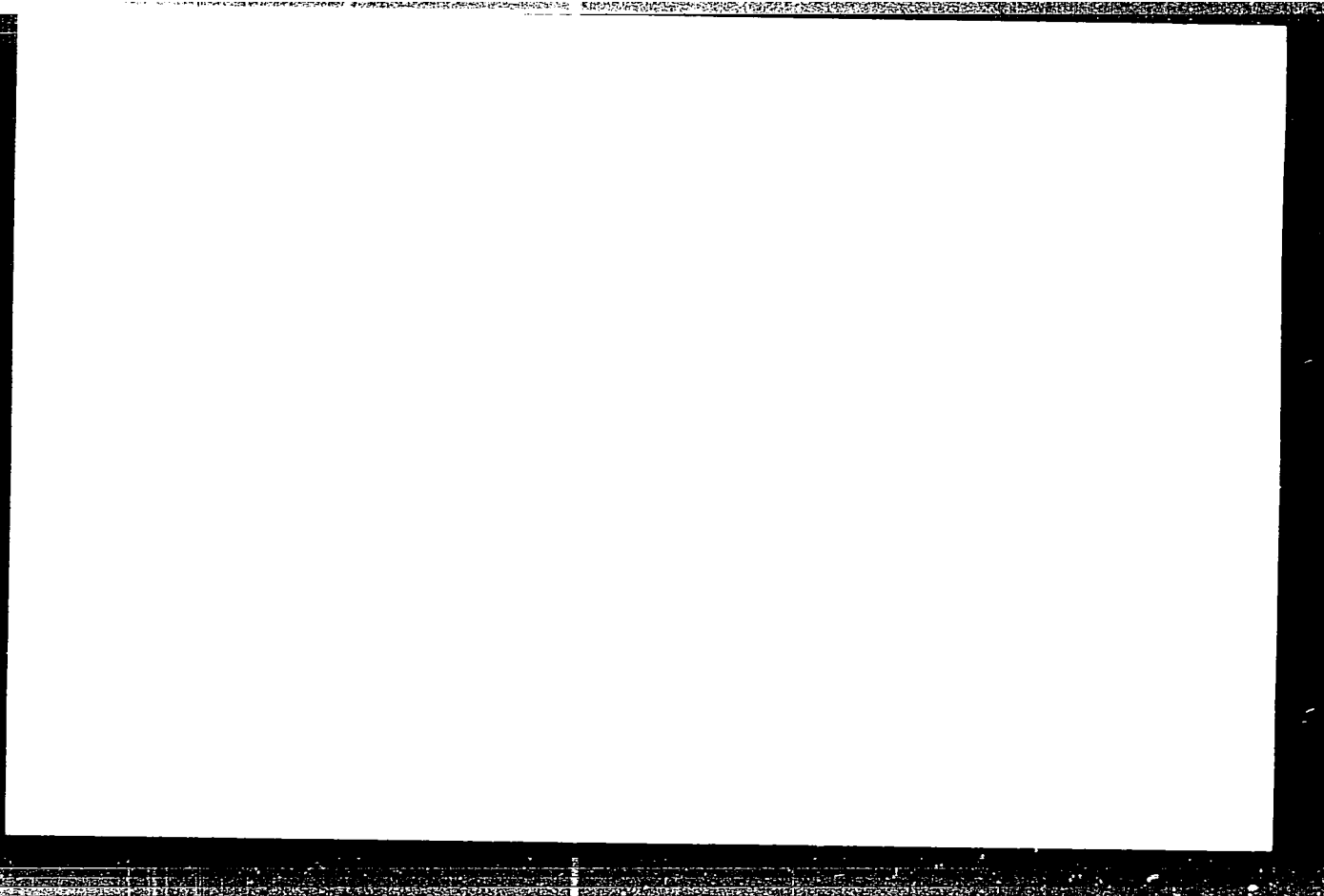
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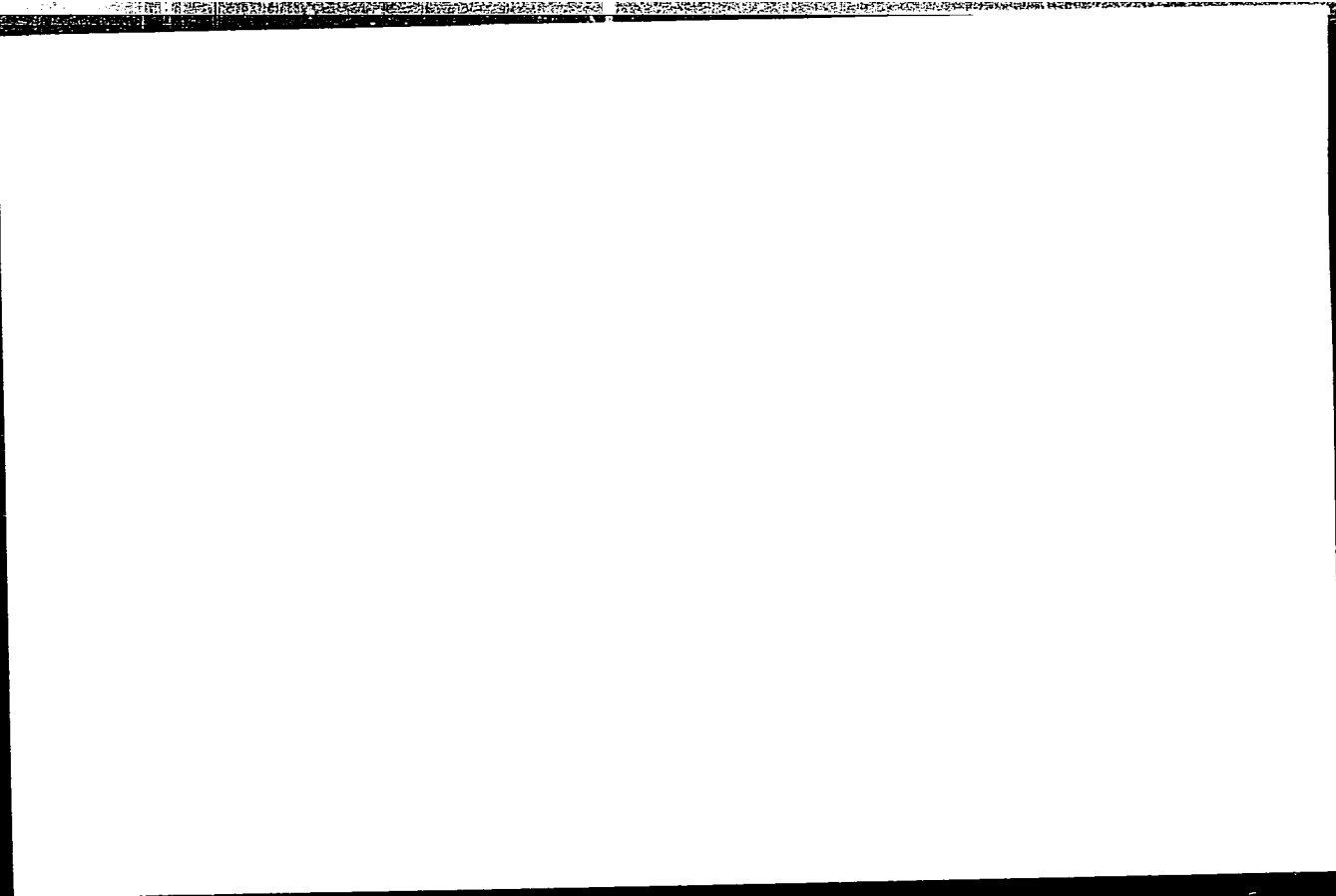
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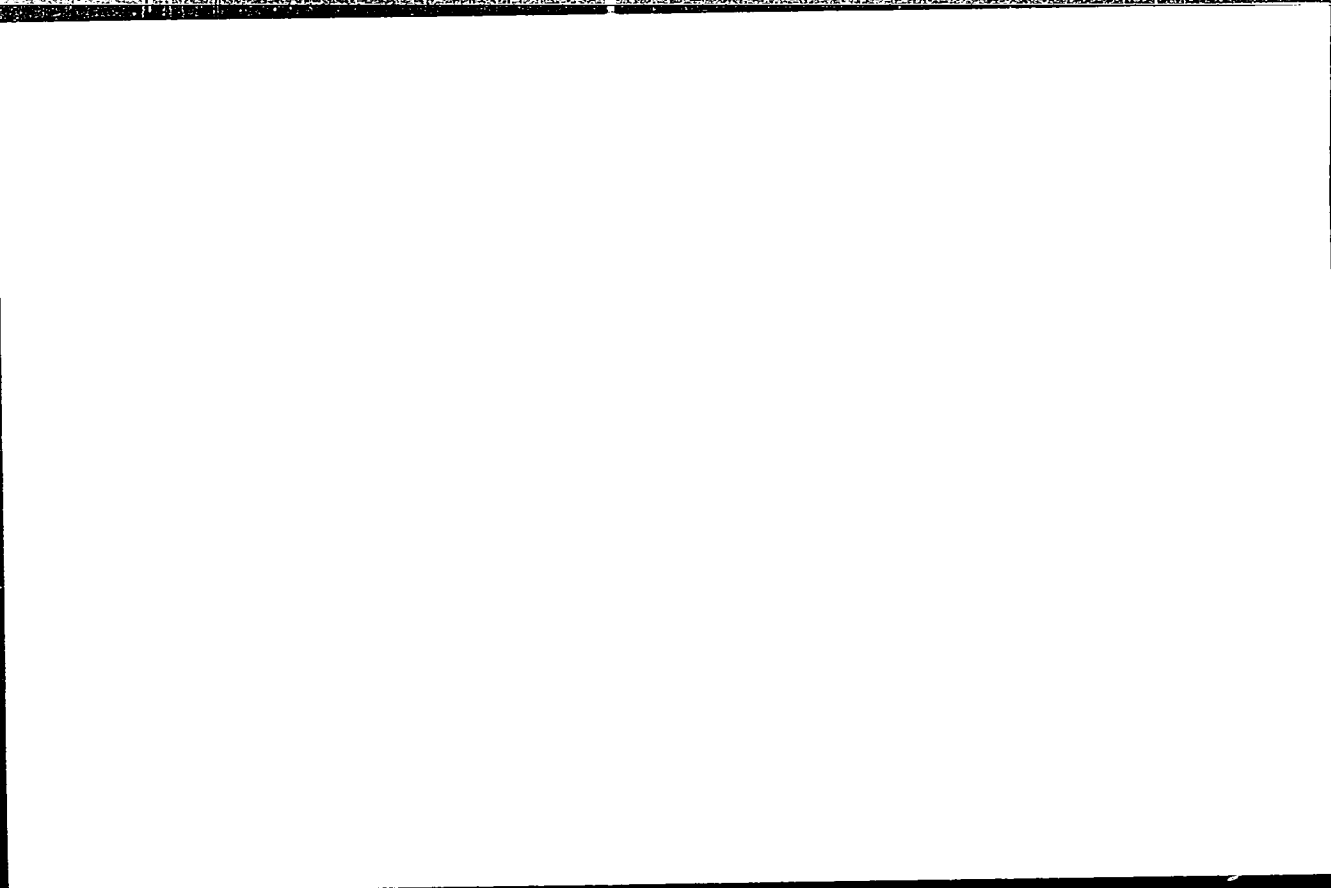


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SOV/137-59-5-11567

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 268  
(USSR)

AUTHOR: Nikitin, V.P. 16

TITLE: Reconditioning of Parts by Electrolytic Steel-Plating

PERIODICAL: Rudnyy Altay (Sovmarkhoz Vost.-Kazakhstansk. ekon. adm. r-na),  
1958, Nr 2, pp 44 - 45

ABSTRACT: The method of electrolytic steel plating is recommended for reconditioning moderately and strongly worn parts. The method produces coatings of  $> 3$  mm thickness and desirable hardness. Thus, coating of  $150 - 700 \text{ kg/mm}^2$  hardness may be produced by electrolytic steel-plating in chlorous electrolyte with a chlorous Fe concentration as high as  $200 - 650 \text{ g/l}$  at  $60-90^\circ\text{C}$  and  $D_k 5 - 80 \text{ a/dm}^2$ . The yield strength of the coating exceeds the strength of the base metal by 20%. ✓

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Card 1/1

6(

SOV/19-59-14-226/244

AUTHORS: Chesnokov, V.Ya., Nikitin, V.P., Kadykov, Yu.V.

TITLE: A Decoder

PERIODICAL: Byulleten' izobreteniy, 1959, Nr 14, p 57 (USSR)

ABSTRACT: Class 74b, 8<sub>07</sub>. Nr 121361 (605528/26 of 6 Aug 1958).

This decoder contains electromagnetic relays and contact pick-ups sending to the output circuit a number of pulses corresponding to the number of the pick-up; to count up pulses with a low sequence frequency, of the order of 10 pulses per second, the decoder has a series of circuits consisting of a relay winding and a capacitance discharging into the winding of the relay of the preceding circuit. The decoder also has an output relay. ✓

Card 1/1



NIKITIN, V.P., inzh. po mekhanizatsii

Mechanization of line work in the line construction centers in Moscow Province. Vest. svyazi 22 no.7:16-17 JI '62. (MIRA 15:7)

1. Moskovskoye oblastnoye upravleniye Ministerstva svyazi RSFSR.  
(Moscow Province—Electric lines)

NIKITIN, V.P.

Some new species of the genus Potamogeton L. Mat.po geol.Zap.Sib.  
no.63:208-216 '62. (MIRA 16:10)

MARTYNOV, V.A.; NIKITIN, V.P.

In glacial layers in the cross section of the Beloputok  
"continent" on the Ob River. In: Izv. Inst. geol. i geofiz.  
Sib. otd. AN SSSR no.25:73-81. 1964.

(MIA 1011)

USSR/Human and Animal Physiology - Circulation.

V-4

Abs Jour : Ref Zhur - Biol., No 4, 1958, 18199

Author : V.P. Nikitin

Inst : -

Title : The Functional Characteristics of the Large Vessels in Hypertensive Disease.

Orig Pub : Terapevt. arkhiv, 1956, 28, No 4, 10-15

Abstract : The speed with which the pulse wave spreads through the large elastic vessels (EV) and through the muscular vessels (MV) is directly proportional to the coefficient of elasticity of their walls. As a characteristic of the tonus of vessels of the muscular type the author suggests the ratio MV/EV, which is independent of the mean blood pressure and amounts to 1.1 to 1.3 among healthy individuals. In patients with hypertensive disease the speed of the pulse wave increases proportionally to the increase in pressure; in addition, the rigidity of the muscular vessels

Card 1/2

NIKITIN, V.P., kandidat meditsinskikh nauk (Leningrad)

Fiftieth anniversary of N.S.Korotkov's study of the auscultative method for determining arterial pressure. Klin.med. 34 no.11: 84-87 N '56. (MIRA 10:2)

1. Iz kafedry propedevтики vnutrennikh bolezney (nach. - chlen-korrespondent AMN SSSR prof. N.N.Savitskiy) Voenno-meditsinskoy ordena Lenina akademii imeni S.M.Korova.

(BLOOD PRESSURE, determ.

auscultation, contribution of N.S.Korotkov)

(AUSCULTATION

in determ. of arterial pressure, contribution of N.S.Korotkov)

NIKITIN, V.P.

Side effects of methylthiouracil. Sov. med. 22 no. 12:122-123 D '58.

(MIRA 12:1)

1. Iz kafedry propedevtik vnutrennikh bolezney Voenno-meditsinskoy  
ordena Lenina akademii imeni S.M. Kirova (nach. - zasluzhennyy deyatel'  
nauki prof. N.M. Savitskiy).

(THIOURACIL. related cpds.

methylthiouracil, side eff. (Rus))

NIKITIN, V.P., kand.med.nauk (Leningrad)

Result of a study of the functional state of the arterial system. Klin.med. 37 no.6:141-148 Je '59. (MIRA 12:8)

1. Iz kafedry obshchey terapii (nach. - deystvitel'nyy chlen  
AMN SSSR zasluzhennyy deyatel' nauki prof.M.N.Savitskiy)  
Voyenno-meditsinskoy ordena Lenina akademii imeni S.M.Kirova.  
(ARTERIES, physiol.

graphic methods of study (Rus))

NIKITIN, V.P., polkovnik meditsinskoy sluzhby

Significance of sphygmography in the diagnosis of neurocirculatory  
dystonia. Voen.-med. zhur. no.5:22-26 My '60. (MIRA 13:7)  
(BLOOD—CIRCULATION, DISORDERS OF) (SPHYGMOGRAPH)



VLASOV, V.P.; NIKITIN, V.P.; BEROVA, F.B.

Diagnostic value of the test for C-reactive protein. Sov. med. 24  
no.6:116-121 Je '60. (MIRA 13:9)

1. Iz kliniki obshchey terapii (nachal'nik - deystvitel'nyy chlen  
AMN SSSR prof. N.N. Savitskiy) Voenno-meditsinskoy ordena Lenina  
akademii imeni S.M. Kirova.  
(PROTEINS) (HEART—DISEASES)

DOROKHOVA, Ye.I.; NIKITIN, V.P., dotsent (Leningrad)

Diet therapy in hypertension. Klin.med. 38 no.12:34-38 D '60.  
(MIRA 14:2)

1. Iz kafedry obshchey terapii (nach. - deystvitel'nyy chlen  
AMN SSSR prof. N.N. Savitskiy) Voenno-meditsinskoy ordena  
Lenina akademii imeni S.M. Kirova.  
(HYPERTENSION) (DIET IN DISEASE)

NIKITIN, V.P., dotsent (Leningrad)

Functional diseases of the cardiovascular system, their diagnosis  
and treatment. Klin.med. no.1:19-25 '62. (MIRA 15:1)

1. Iz kafedry obshchey terapii (nachal'nik - deystvitel'nyy chlen  
AMN SSSR zasluzhennyy deyatel' nauki prof. N.N. Savitskiy) Voenno-  
meditsinskoy ordena Lenina akademii imeni S.M. Kirova.  
(CARDIOVASCULAR SYSTEM -DISEASES)

BYALOV, G. I.; MITIN, V. I.

1. "On the question of the genetic inheritance of the ability to resist the action of the drug. Ser. Biol. Zhurn. 1964 (MIRA 1964)

2. "On the question of the genetic inheritance of the ability to resist the action of the drug. Ser. Biol. Zhurn. 1964 (MIRA 1964)